

pollution control element in a housing, where the pollution control element has an outer curved surface, said sheet material having

a major top surface and a major bottom surface,

a thickness,

a length dimensioned so as to allow said sheet material to be wrapped lengthwise completely around the outer curved surface of the pollution control element and form a seal between the pollution control element and the housing,

a width that is smaller than the length, and

at least one score-line formed in at least the major top surface of said sheet material, each score-line being disposed across the width of said sheet material.

35. (New) The mounting article of ~~claim 34 wherein said score-line extends across the entire width of said sheet material.~~

36. (New) The mounting article of claim 34 wherein said score-line is perpendicular to the length of said sheet material.

37. (New) The pollution control device of claim 34 wherein said at least one score-line is a cut into said sheet material that is formed without removing any of said sheet material.

REMARKS

Claims 12-16, 18-20, 23-26 and 28 have been amended and new claims 29-37 have been added. Claims 12-16, 18-20 and 23-37 are pending.

Examination and reconsideration of the application as amended is requested.

§§ 102 and 103 Rejections

Claims 12-19, 23-25, 27 stand rejected under 35 U.S.C. § 102(b), as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 61-89916.

Claims 16, 19-20 and 23 stand rejected under 35 U.S.C. 103 as being unpatentable over JP-61-89916 as applied to claims 12-19, 23-25, and 27 in view of JP 2-61313.

Claim 28 stands rejected under 35 U.S.C. 103 as being unpatentable over JP 61-89916 as applied to claims 12-19, 23-25, 27 in view of Corn (U.S. Patent No. 5,332,609).

Claims 12-20, 23-25, and 27 stand rejected under 35 U.S.C. 103 as being unpatentable over JP 2-61313 in view of JP 61-89916.

Claim 28 is rejected under 35 U.S.C. 103 as being unpatentable over JP 2-61313 in view of JP 61-89916 as applied to claims 12-20, 23-25, and 27 in view of Corn (U.S. Patent No. 5,332,609).

Applicants Response:

JP 61-89916 discloses concaves 1a that only run along the length of its seal-mat 1 (see pg. 4, lines 16-18) and, therefore, are oriented perpendicular to the longitudinal axis (i.e., run around the circumference) of the honeycomb catalyzer 2 (see Fig. 2), when the seal-mat 1 is wrapped around the catalyzer 2. JP 61-89916 teaches that the shape and number of the concaves 1a can vary (see pg. 5, lines 8-10), but it is silent on any variation in the orientation of the concaves 1a. It is submitted that the disclosure in JP 61-89916, on page 5, lines 10-12, that "in addition to the form shown in Fig. 1, a surface having a waveform, checkerboard design, etc. can be maintained" is indefinite or, at best, refers only to alternative shapes of the concaves 1a and not the orientation of the concaves 1a, because the preceding sentence only refers to the shape and number of the concaves 1a.

As noted on page 5, lines 1-7, of the English translation of JP 61-89916, only a part of the projections b on the surface of the seal-mat 1 move toward the concaves 1a, when the seal-mat 1 is in use. Therefore, the concaves 1a are still open when the seal-mat 1 is in use. Even so, JP 61-89916 discloses that good seal properties between the seal-mat 1 and the honeycomb catalyzer 2 are still maintained (see pg. 5, line 7). This seal can only be maintained when the concaves 1a are not open to the flow of gas therethrough, such as when the concaves 1a are perpendicular to the flow of gas.

It should also be noted that the dashed lines angled across the honeycomb catalyzer 2 in Fig. 2 are not representations of the concaves 1a. Rather, since Fig. 2 is a cross sectional view,

these dashed lines represent the graphic drawing symbol for the refractory material used to make the catalyzer 2 (see MPEP §608.02, pg. 600-81).

JP 61-89916 also teaches that the purpose of the concaves 1a is to reduce the pressure being exerted against the catalyzer 2 by the seal-mat 1. There is no disclosure, teaching or suggestion in JP 61-89916 to orient the concaves 1a so as to relieve enough surface tension in the seal-mat 1 to avoid undesirable cracking or breaking of the seal-mat 1 that would otherwise occur, when the seal-mat 1 is disposed around the catalyzer 2. Therefore, JP 61-89916 would not provide the person of ordinary skill in the art with any motivation to form one or more score-lines widthwise across the major top surface of a sheet material according to the present invention.

If the present score-lines were oriented like the concaves 1a shown in JP 61-89916 (i.e., perpendicular to the central axis of the pollution control element), then the score-lines would not be in a position to relieve enough surface tension in the sheet material to avoid undesirable cracking or breaking of the sheet material that would otherwise occur, when the sheet material is disposed around the curvature of the pollution control element. In other words, in order to relieve surface tension in the sheet material, score-lines on the major outer or top surface of the sheet material must be able to open when the sheet material is disposed around the pollution control element. Such an opening of the score-lines will not occur when the score-lines are oriented so as to run around the pollution control element (i.e., oriented perpendicular to the longitudinal axis of the pollution control element).

Contrary to the assertion made in the Office Action, there is no teaching in the present application to locate score lines perpendicular to the gas flow (i.e., perpendicular to the longitudinal axis of the pollution control element) in the manner shown in JP 61-89916. The present score lines can be parallel to the flow of gas through the pollution control element, but other score lines are also contemplated by the present invention (see page 6, lines 28-31). In addition, the present specification expressly teaches that a score-line can be provided in any pattern (see e.g., page 6, lines 23-27 and Figs. 9 and 10, and page 2, line 18) as long as the openings created in the sheet material after wrapping a pollution control element are predictable and do not provide further undesirable cracking or propagation of the opening. In addition, see

page 2, lines 4-5, which indicates that the present invention does not have to completely eliminate the surface tension. The surface tension can be relieved or reduced (i.e., less than completely relieved) by using one or more such score-lines.

Applicants appreciate the finding that claim 26 is allowed. Based on the above remarks, it is submitted that the remaining claims are also patentable over the references cited by the Examiner. The references, either individually or in combination, fail to teach, suggest, or disclose the invention currently recited in the claims. Withdrawal of the rejection is therefore respectfully requested.

Conclusion

In view of the foregoing amendments and remarks, favorable reconsideration of the present application and the passing of this case to issue with all claims allowed is courteously solicited. Should the Examiner wish to discuss any aspect of this application, Applicants' undersigned attorney suggests a telephone interview in order to expedite the prosecution of the application.

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Respectfully submitted,

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Version With Markings to Show Changes Made

Please amend claims 12-16, 18-20, 23-26 and 28 as follows:

12. (Three Times Amended) A pollution control device comprising:

a housing;

a pollution control element having an outer curvature and being disposed within

• said [the] housing; and

a mounting article disposed between said [the] pollution control element and said [the] housing, said mounting article comprising a sheet material useful for mounting said [a] pollution control element, said sheet material having major top and bottom surfaces, a thickness, a length and a width, said sheet material having at least one score-line in [at least one of] the major top surface and across the width [bottom surfaces] of said sheet material to relieve enough surface tension in said sheet material that, when said sheet material is disposed around the curvature of said pollution control element, undesirable cracking or breaking of said sheet material that would otherwise occur is avoided [, said at least one score-line extending in a direction parallel to gas flow through said pollution control element].

13. (Twice Amended) The pollution control device of claim 12 wherein at least two score-lines are formed in the major top surface[s] and across the width of said sheet material [have a total of at least two score-lines].

14. (Amended) The pollution control device of claim 13 wherein each of said score-lines extend across the entire width of said [the] sheet material.

15. (Amended) The pollution control device of claim [14] 12 wherein said at least one score-line[s are] is perpendicular to the length of said [the] sheet material.

16. (Amended) The pollution control device of claim 15 wherein the depth of said at least one [the] score-line[s] ranges from about 5 to about 90 percent of the thickness of said [the] sheet material.

18. (Amended) The pollution control device of claim 12 wherein said sheet material has [said] at least one score-line in the major bottom [top] surface and across the width of said [the] sheet material.

19. (Amended) The pollution control device of claim [13] 12 wherein said [the] sheet material is intumescent.

20. (Amended) The pollution control device of claim 13 wherein said [the] sheet material is intumescent, said [the] score-lines extend across the entire width of the top surface of said [the] sheet material and perpendicular to the length of said [the] sheet material and wherein the depth of said [the] score-lines is about 50 percent of the thickness of said [the] sheet material.

23. (Twice Amended) The pollution control device of claim 12 wherein said pollution control element [the monolith] has a round shaped cross section and [the] said sheet material has a plurality of score-lines in the top surface of [the] said sheet material and the top surface of [the] said sheet material faces [the] said housing.

24. (Amended) The pollution control device of claim 12 wherein said [the] sheet material has at least one score-line in the bottom surface and across the width of said sheet material and the bottom surface faces said [the] pollution control element.

25. (Amended) The pollution control device of claim 24 wherein the bottom surface of said [the] sheet material has a plurality of said at least one score-line[s].

26. (Amended) A pollution control device comprising:
a housing;
a pollution control element disposed within said [the] housing; and
a mounting article disposed between said [the] pollution control element and said [the] housing, said mounting article comprising a sheet material useful for mounting said [a] pollution control element, said sheet material having major top and bottom surfaces, a thickness, a length and a width, said sheet material having at least one score-line in at least one of the major

top and bottom surfaces of said sheet material to relieve surface tension in said sheet material, said at least one score-line extending in a direction parallel to gas flow through said pollution control element, wherein said sheet material includes a first layer suitable for receiving strips of a second layer of sheet material, said strips of a second layer of sheet material attached to said [the] first layer in an adjacent manner to provide said at least one score-line.

28. (Amended) A pollution control device comprising:

a housing;

a pollution control element having a radius of curvature and being disposed within [the] said housing[, said pollution control element having an oval shape, said oval shape defined by a first radius of curvature and a second radius of curvature, said second radius of curvature smaller than said first radius of curvature]; and

a mounting article disposed between [the] said pollution control element and [the] said housing, said mounting article comprising a sheet material useful for mounting said [a] pollution control element, said sheet material having a major top surface facing said housing and a major bottom surface[s] facing said pollution control element, a thickness, a length and a width, said sheet material having at least one score-line located proximate [the] said [second] radius of curvature and [of the pollution control element, said at least one score-line] extending in a direction that is not perpendicular [parallel] to gas flow through said pollution control element, said at least one score-line relieving surface tension in said sheet material that would have been generated by said sheet material being disposed around the radius of curvature of said pollution control element if not for said at least one score-line.

Please delete claim 17, without prejudice of disclaimer.

Please add new claims 29- 37, as follows:

29. (New) The pollution control device of claim 28 wherein said pollution control element has an oval shaped cross section defined by a larger radius of curvature and a smaller radius of curvature, said smaller radius of curvature is smaller than said larger radius of

curvature, said at least one score-line is located proximate to said smaller radius of curvature and no score-line is located proximate to said larger radius of curvature.

30. (New) The pollution control device of claim 29 wherein the oval shaped cross section of said pollution control device is defined by two smaller radius of curvature and said at least one score-line includes at least one score-line located proximate to each of said smaller radius of curvature.

31. (New) The pollution control device of claim 28 wherein said at least one score-line is a cut into said sheet material that is formed without removing any of said sheet material.

32. (New) The pollution control device of claim 12 where the pressure applied by said sheet material on said pollution control element is not appreciably affected by said at least one score-line.

33. (New) The pollution control device of claim 28 where the pressure applied by said sheet material on said pollution control element is not appreciably affected by said at least one score-line.

34. (New) A mounting article for mounting a pollution control element within a pollution control device, said mounting article comprising a sheet material useful for mounting a pollution control element in a housing, where the pollution control element has an outer curved surface, said sheet material having

a major top surface and a major bottom surface,

a thickness,

a length dimensioned so as to allow said sheet material to be wrapped lengthwise completely around the outer curved surface of the pollution control element and form a seal between the pollution control element and the housing,

a width that is smaller than the length, and

at least one score-line formed in at least the major top surface of said sheet material, each score-line being disposed across the width of said sheet material.

35. (New) The mounting article of claim 34 wherein said score-line extends across the entire width of said sheet material.

36. (New) The mounting article of claim 34 wherein said score-line is perpendicular to the length of said sheet material.

37. (New) The pollution control device of claim 34 wherein said at least one score-line is a cut into said sheet material that is formed without removing any of said sheet material.